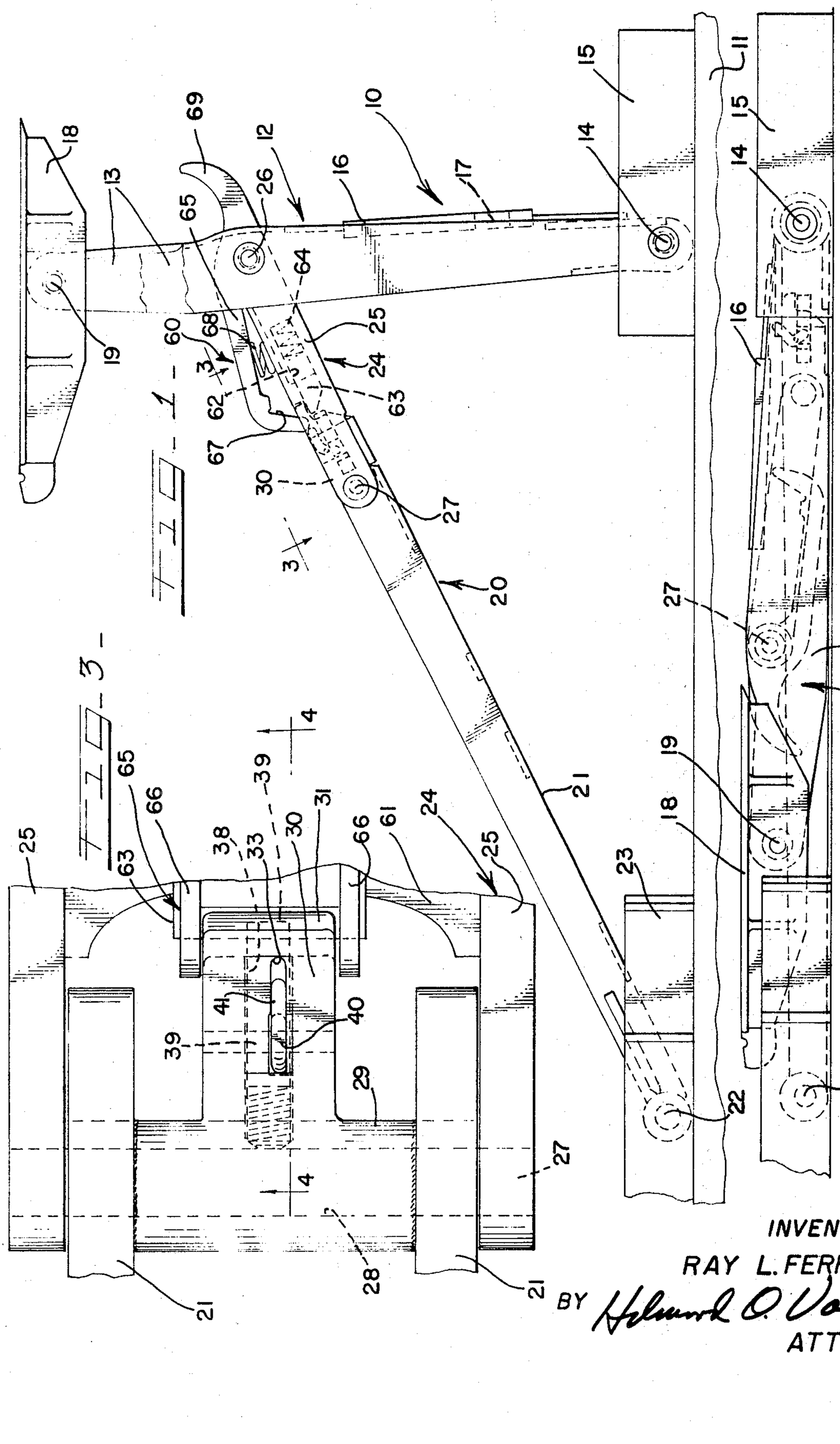
Oct. 27, 1970 R. L. FERRIS 3,536,282

LOCK INDICATOR FOR FIFTH WHEEL TRAILER HITCH

Filed Nov. 13, 1967 2 Sheets-Sheet 1



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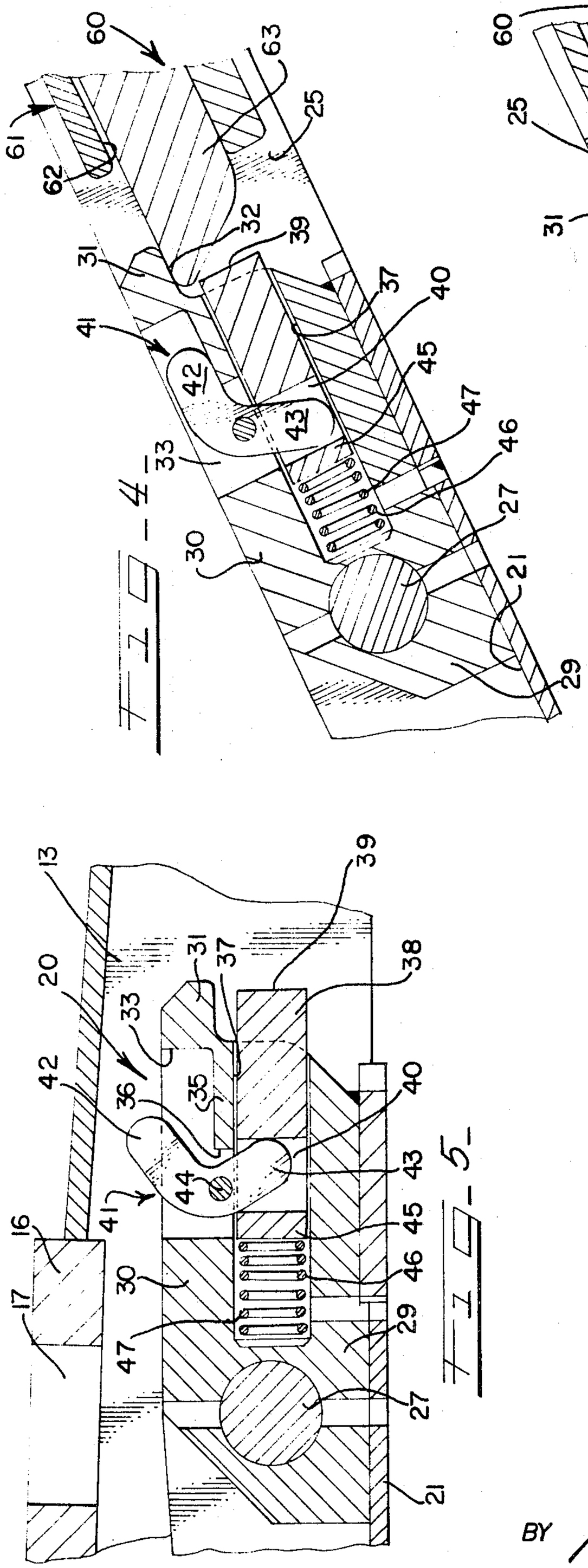


FIG - 4

FIG - 5

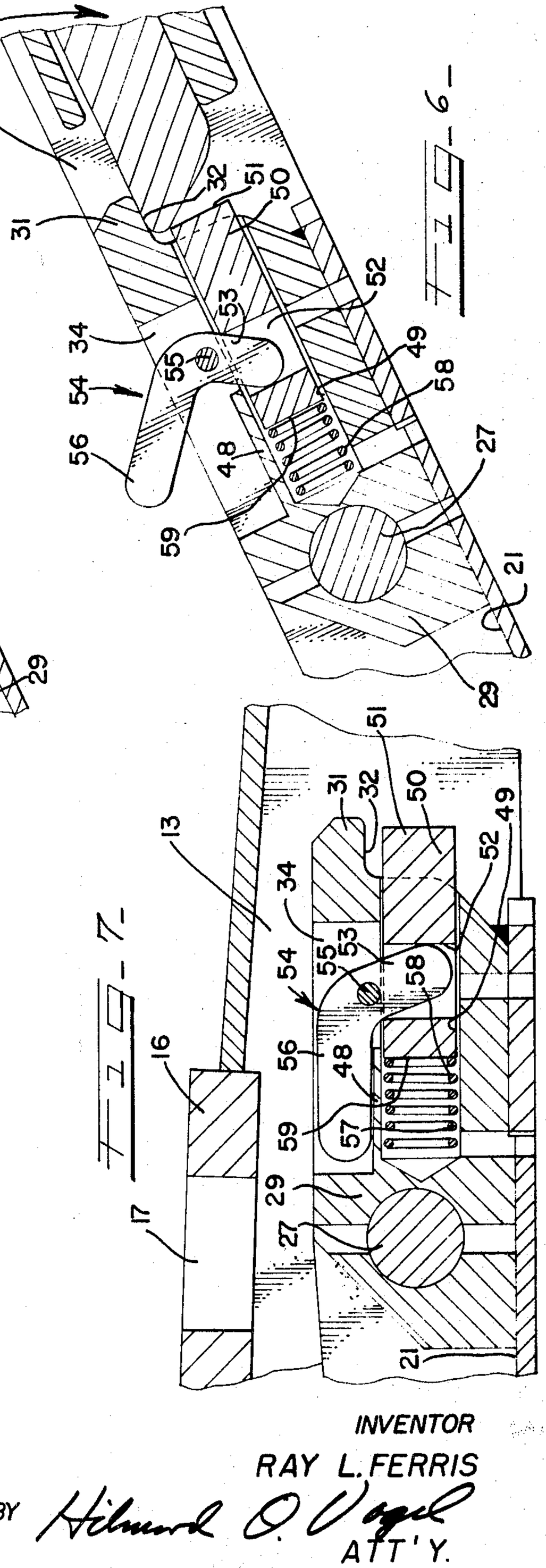


FIG - 6

FIG - 7

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LOCK INDICATOR FOR FIFTH WHEEL TRAILER HITCH

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Int. Cl. B65j 1/22
U.S. Cl. 248—119 3 Claims

ABSTRACT OF THE DISCLOSURE

A trailer hitch for supporting a wheeled trailer on a flat car with said hitch including a vertical strut having a fifth wheel plate supported thereon for connection to the kingpin of the trailer, the said upright strut being supported in its vertical position by means of a collapsible diagonally extending strut pivotally connected to a cushion supported on the flat deck of a railway car. The diagonal strut consists of upper and lower strut elements pivotally connected together in a linear or operative position by means of a latch mechanism which is provided with a disconnectable latch element associated with a lock indicator which in one position of the latch mechanism projects outwardly from the diagonal strut to indicate to an operator said position.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to the field of trailer-on-flat-car operation (TOFC) wherein the trailer is supported on its wheels at its rear end on the flat deck of the car and its fifth wheel kingpin engages a fifth wheel plate supported on a trailer hitch also referred to as a fifth wheel stanchion.

Description of the prior art

The present invention relates to the foldable type of stanchion disclosed in the Ferris Pat. 3,185,421. In stanchions of the folding type an upright support is generally provided for the fifth wheel plate which is adapted to receive in engagement the kingpin of a trailer. The upright stanchion includes a diagonal strut having a pair of upper and lower strut elements pivotally connected together which in a linear position support the upright strut in its supporting position and which in a collapsed provided for collapse of the trailer hitch onto the deck of a flat car into a non-use position. To maintain the upper and lower strut in the linear operable position a latch mechanism is provided which securely locks the struts in this position. As shown in the aforementioned patent, the latch mechanism may be actuated to lower the trailer hitch to its collapsed position by the application of a longitudinal force which provides for the collapsing movement of the trailer hitch. The latching mechanism used in connection with the present invention is particularly described in the Wille and Ferris application Ser. No. 543,991 filed Apr. 20, 1966 now U.S. Pat. No. 3,358,955 issued on Dec. 19, 1967. The prior art patents of the type of trailer hitch to which the present invention applies disclose various latching mechanisms. The present invention is concerned with a lock-indicating device which cooperates with the latching mechanism to clearly indicate to the operator that the latching mechanism is properly locked in position for supporting the upper and lower struts in their linear or supporting position.

SUMMARY

The present invention is concerned with the provision of a lock-indicating device which cooperates with a latching mechanism to indicate to the operator that the latching mechanism is effective to retain the diagonal strut of a

trailer hitch in a supporting position. Since the type of trailer hitch to which the present invention applies is raised, from a collapsed position, by means of a tractor to a raised position wherein the latching mechanism is automatically operable to cooperate with the upper and lower struts of a diagonal strut for locking the same in a linear position, the present lock indicator indicates to the operator that the latching mechanism has satisfactorily completed its locking engagement and thus provides assurance that the trailer hitch is secured against accidental collapse during train operation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of a trailer hitch in an operative or upright position on a flat car ready for supporting a trailer in position;

FIG. 2 is the trailer hitch disclosed in FIG. 1 shown in a collapsed or inoperative position;

FIG. 3 is an enlarged plan view taken substantially along the line 3—3 of FIG. 1;

FIG. 4 is an enlarged cross sectional view of a lock indicator and latching mechanism taken substantially along the line 4—4 of FIG. 3;

FIG. 5 is a cross sectional view similar to FIG. 4 showing the position of a lock indicator in a collapsed position;

FIG. 6 is a modified view similar to FIG. 4 showing a cross section of a lock-indicating mechanism and latch mechanism; and

FIG. 7 is a cross sectional view similar to FIG. 6 showing the lock indicator and latching mechanism in a collapsed position.

DESCRIPTION OF PREFERRED EMBODIMENT

A preferred embodiment of the present invention is disclosed in FIGS. 1 through 5 wherein a trailer hitch or stanchion is generally referred to by the reference character **10**. The trailer hitch **10** comprises a base **11** which generally is formed by the deck of a railway car. The trailer hitch **10** comprises a vertical strut **12** including a pair of vertically extending laterally spaced strut members **13** which are pivotally connected to the deck of the car **11** by means of a pivotal connection **14** with a bracket **15** supported on said deck.

The vertical strut members **13** are suitably connected by means of a vertically extending plate **16** having an opening **17** therethrough. The plate **16** permits raising of the vertical strut members **13** to their raised position by means of a hook which engages the opening **17** so that a tractor carrying said hook upon rolling movement can raise the trailer hitch **10** to the operative position. This operation is conventional in TOFC loadings wherein the operator of the tractor merely manipulates a hook into engagement with the opening **17** as the hitch **10** is lying in a position shown in FIG. 2 and where upon movement of the tractor the same is lifted to its raised and operative position.

The vertical strut members **13** also support at their upper ends a fifth wheel plate **18** which is pivotally connected as indicated at **19** to the vertical strut **12**.

In order to maintain the vertical strut **12** in its upright position a diagonally extending strut **20** is provided. The diagonal strut **20** comprises a pair of transversely spaced lower strut elements **21** which are pivotally connected as indicated at **22** to a bracket **23** which is suitably connected to a cushion on the deck **11** of the railway car. The lower strut elements **21** are connected to an upper strut **24** comprising a pair of laterally spaced upper strut elements **25**. The pivot connection of the upper and lower strut elements is by means of a suitable pivot **27**. The upper strut elements **25** are also pivotally connected to the strut members **13** by means of a pivot pin indicated at **26** which is supported on strut members **13**.

The pivotal connection of the strut elements **21** and **25** is best shown in FIG. 3 wherein it is shown that the pivot pin **27** extends through the strut elements **21** and through a bore **28** provided in a transversely extending T-shaped bracket **29** rigidly welded to the upper ends of the lower strut elements **21**. The T-shaped bracket **29** comprises a projecting portion **30**, which as best shown in FIGS. 3 through 7, is provided at its forward ends with a keeper **31** having a suitable undercut portion **32**. The projecting portion **30** also is provided, as shown in FIGS. 3, 4 and 5, with a slot or recess **33** and as shown in FIGS. 6 and 7 with a slot or recess **34**.

Referring now particularly to FIGS. 3, 4 and 5, the preferred embodiment shows the projecting portion **30** provided with a horizontally extending wall element **35** having a slot **36** provided therein. The slot **36** is in communication with a recess **37** in which an actuating element **38** is slidingly disposed. The actuating element **38** comprises a front face **39** and includes a slot **40**. An L-shaped indicator element **41** includes finger elements **42** and **43** the said indicator element being mounted for pivotal movement on a pin **44** supported within the recess **33**. The finger **43** is in projecting engagement with the slot **40** and upon sliding movement of the actuating element **38** is movable from the position indicated in FIG. 4 to the position of FIG. 5.

The actuating element **38** also includes a rear wall **45** movable into an end portion **46** of the recess **37**. The end portion **46** holds captive a spring **47** which is urged against the rear face **45** of the actuating element **38** to normally urge the same into the position shown in FIG. 5.

Referring now to FIGS. 6 and 7, the projecting portion **30** containing the recess **34** is also provided with a wall **48** being suitably apertured to provide communication with a recess **49**. The recess **49**, similar to the embodiment shown in FIGS. 4 and 5, includes for sliding movement an actuating element **50**. The actuating element **50** includes a front face **51** and is provided with a slot or aperture **52** which is engaged by a finger **53** of an L-shaped indicator element **54**. The element **54** is also pivotally connected within the recess **34** by means of a pivot pin **55** and the indicator element **54** includes an indicating finger **56**. The recess **49** is provided with an end portion **57** which holds captive a spring **58** being urged against the rear wall portion **59** of the actuating element **50** to urge the same into the position shown in FIG. 7.

Both the preferred embodiment shown in FIGS. 1 through 5, and the modification of FIGS. 6 and 7 include a latch mechanism **60** which is generally described and is also described in more detail in the aforementioned co-pending application Ser. No. 543,991, now Pat. No. 3,358,955.

The latch mechanism **60** comprises a transverse wall **61** suitably supported between the upper strut elements **25** as indicated in FIG. 3 The wall **61** includes a recess **62** which contains for sliding movement a latch element **63**. A spring **64** disposed in the recess **62** normally urges the latch element **63** in the direction of the keeper **31** where in the position as shown in FIGS. 4 and 6, the said latch element **63** is in engagement with the undercut surface **32** of the keeper **31** thereby retaining the upper and lower diagonal strut elements **21** and **25** in a linear or supporting position relative to the vertical strut **12**. The latch mechanism **60** also includes a pivoted hook arm **65** having a pair of transversely spaced hook arms **66** which are provided at their ends with hook shaped portions **67**. The hook arm **65** is normally urged in the position shown in FIG. 1 by means of the spring **68** wherein it is out of engagement with the latch **63**. The hook arm **65** also includes a thrust engaging projection **69**. The hook arm **65** is pivoted about the pivot pin **27** as will be disclosed in the operation which follows.

THE OPERATION

The operation of the trailer hitch **10** will now be generally described. As indicated previously, the strut **12** is pulled to its upright position shown in FIG. 1 by means of a tractor having a suitable hook arrangement engageable with the plate **16**. Upon pulling the hitch **10** from its collapsed position shown in FIG. 2 to the upright position, the pivotal strut elements **21** and **25** are moved to the linear position indicated in FIGS. 1, 4 and 6. Since the latch element **63** is continually urged in the direction of the keeper **31** upon the assumption of the strut elements **21** and **25** of their linear position, the latch element **63** is in engagement with the undercut surface **32** as shown in FIGS. 4 and 6, thereby retaining the elements in linear relation. To collapse the stanchion to its collapsed position, the tractor provides a longitudinal blow against the element **69** causing the rotation of the arm **65** whereupon the hook portion **67** causes retraction of the latch element **63** into its recess **62** whereupon it becomes disengaged from the keeper **31** and the strut elements **21** and **25** jackknife to permit collapse of the trailer hitch.

The invention of the preferred embodiment of FIGS. 4 and 5 shows that in the collapsed position of the trailer hitch the actuating element **38** has been moved outwardly from the recess **37** by means of the spring **47** in turn causing rotation of the L-shaped indicator element **41** from a recessed position to the position shown in FIG. 5 wherein the finger **42** projects outwardly indicating that the latch mechanism **60** is not in a locked position. After the strut elements **21** and **25** have been moved to the supporting locked position shown in FIG. 4, the latch element **63** in its engagement with the keeper **31** has pushed the actuating element **38** to the position indicated whereupon the finger **42** has moved to a recessed position within the recess **33** and thus, since there is no projection of the indicator element **41** out of the recess **33**, the operator knows that the strut elements **21** and **25** are properly locked in the linear position. Even in the upright operative position of the hitch, any projection of the finger **42** outwardly of the recess **33** would indicate to the operator that the latch mechanism **63** has not moved to its completely locked position.

The modified version shown in FIGS. 6 and 7 provide similar locking indication. However, in this particular arrangement projection of the L-shaped locking element **54** from the recess **34** indicates that the latching element **63** has moved to its perfectly locked position whereas if the finger **56** is in a recessed or partially recessed position relative to the recess **34**, the operator knows that the latch member **63** has not completely moved to its locking position. In other words, in FIG. 7 the indicator element **54** is completely recessed which, of course, is the position which indicates the unlocked position of the latch mechanism. In FIG. 6 the actuating element has been shoved rearwardly against the spring **58** by means of the latch element **63** moving into its locked position relative to the keeper **31**. Thus, the projection of the indicating finger **56** outwardly of the recess **34** indicates that the complete locking function has been obtained. By means of the preferred embodiment and the modification of the locking indicating arrangement, the operator by visual observation is assured at all times that the trailer hitch **10** is in the proper position for over-the-road operation and support of a trailer. By merely glancing at the locking indicator he is able to determine that effective locking function of the latch has been achieved so that there is no possibility of the said latch becoming unlocked during over-the-line operation.

Thus, it is apparent that the advantages, function and structure of the invention have been fully disclosed, that it must be understood the changes in modifications may be made therein without departing from the spirit of the invention nor the scope thereof as defined in the appended claims.

What is claimed is:

1. In a trailer hitch having a first strut adapted to be pivotally connected to a railway car for movement from an upright position to a collapsed position, a connecting plate supported by said first strut for attachment to the kingpin of a trailer, a second strut extending diagonally relative to said first strut, said second strut including a first strut element pivotally connected to a railway car, a second strut element pivotally connected to said first strut and to said first strut element, said strut elements in a linear position supporting said first strut and being pivotal in jackknife relation during movement of said first strut to its collapsed position, latching means including a movable latch element on said second strut element, a keeper on said first strut element engaged by said movable latch element to a connected position for retaining said strut elements in said linear position, and means supported on said struts movable upon the application of a longitudinal force for disconnecting said latch element from said keeper to collapse said hitch;

a latch position-indicator arrangement comprising:

a first recess in a surface of said second strut adjacent the pivotal connection of said first and second strut elements,

an indicator element pivotally connected within said recess,

an actuating element movably supported on said second strut and engaging said indicator element for moving the same, said actuating element in the disconnected position of said latch element maintaining said indicator element in a recessed position within said recess, and

said latch element in said connected position engaging said actuating element displacing said indicator element from said recess to a projecting position,

said second strut including a second recess, said actuating element being slidably disposed in said second recess and having a position disposed adjacent to said keeper and in the path of movement of said latch element whereby during movement of said latch element to its connected position said actuating element is slidably moved.

2. The invention in accordance with claim 1,

said indicator element being pivotally connected within said first recess and having an L-shaped configuration including a finger, said actuating element having an aperture receiving said finger, and

means within said second recess movably biasing said actuating element in a direction toward said latch element.

3. In a trailer hitch having a first strut adapted to be pivotally connected to a railway car for movement from an upright position to a collapsed position, a connecting plate supported by said first strut for attachment to the kingpin of a trailer, a second strut extending diagonally relative to said first strut, said second strut including a first strut element pivotally connected to a railway car, a second strut element pivotally connected to said first strut and to said first strut element, said strut elements in a linear position supporting said first strut and being pivoted in jackknife relation during movement of said first strut to its collapsed position, latching means including a movable latch element on said second strut element, a keeper on said first strut element engaged by said movable latch element to a connected position for retaining said strut elements in said linear position, and means supported on said struts movable upon the application of a longitudinal force for disconnecting said latch element from said keeper to collapse said hitch;

a latch position-indicator arrangement comprising:

a first recess in a surface of said second strut adjacent the pivotal connection of said first and second strut elements,

an indicator element pivotally connected within said recess,

an actuating element movably supported on said second strut and engaging said indicator element for moving the same, said actuating element in the disconnected position of said latch element maintaining said indicator element in a projecting position from said recess, and said latch element in said connected position engaging said actuating element displacing said indicator element from said projecting position to a recessed position within said recess,

said second strut including a second recess, said actuating element being slidably disposed in said second recess and having a position disposed adjacent to said keeper and in the path of movement of said latch element whereby upon movement of said latch element to its connected position said actuating element is slidably moved.

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